

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-088375

(43)Date of publication of application : 03.04.2001

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(51)Int.Cl. B41J 11/02  
B41J 2/01

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(54) APPARATUS AND METHOD FOR INK-JET RECORDING

(57)Abstract:

PROBLEM TO BE SOLVED: To smoothly discharge ink adhering on a platen.

SOLUTION: Platen ribs 61 as projections for holding a medium to be recorded to a proper recording position are set on a platen 60. Holes 62 are opened to both sides of a root part 63 of the platen rib 61 to be parallel to side faces of the platen rib 61. When ink adheres wrong to the platen 60, e.g. when an image of a larger breadth than a breadth of the medium to be recorded is printed wrong or in a like case, the ink is guided to the root part 63 by a gravity or a surface tension of the ink if the ink of some volume or more collects and is smoothly discharged from the holes 62 along the side faces of the platen rib 61.

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LEGAL STATUS [Date of request for examination] 26.11.2003

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or

application converted registration]  
[Date of final disposal for application]  
[Patent number] 3787469  
[Date of registration] 31.03.2006  
[Number of appeal against examiner's decision of rejection]  
[Date of requesting appeal against examiner's decision of rejection]  
[Date of extinction of right]

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**CLAIMS**

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[Claim(s)]

[Claim 1] The ink-jet recording device characterized by to have the platen rib which is a height for said platen to guide said recorded media in the ink-jet recording device which has the head which records by breathing out ink and making it adhere to recorded media, and the platen which supports said recorded media in the location which counters said head in the location to record, and the hole which were able to make so that the side of this platen rib may meet on the side face of this platen rib.

[Claim 2] The ink-jet recording device according to claim 1 with which said hole is established in the location near the outside of the edge of said recorded media of each size about the migration direction of said head of said platen respectively corresponding to said recorded media of two or more sizes which have a head migration means to move said head to the location which counters the record location of a request of said recorded media on said platen, and are mainly used, respectively.

[Claim 3] The ink-jet record approach of being the ink-jet record approach using an ink-jet recording apparatus according to claim 2, and having the process which moves said head to the location which counters said hole established in the location near the outside of the edge of said recorded media which should be recorded about the migration direction of said head before the ink regurgitation for record, and the auxiliary-discharge appearance process of performing the ink regurgitation which does not contribute to record after that.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the ink jet recording device used as an output unit of information terminal equipments, such as a personal computer, a word processor, and facsimile.

[0002]

[Description of the Prior Art] The conventional ink jet recording device which records by making ink adhere to discharge and recorded media As main components for deciding the adhesion location to the recorded media of ink The carriage with which the head which carries out the regurgitation of the ink is carried, and the head migration means for performing horizontal scanning which is made to move a head to an one direction on recorded media with carriage, and scans the record location of the direction, In case it records by supporting recorded media by the downstream of the conveyance roller for conveying recorded media, and a conveyance roller, it has the platen for keeping good [ precision ] the physical relationship of the printing side of recorded media, and a recording head. Record actuation is performed by making ink adhere to discharge and recorded media, a recording head moving with a head migration means in the recorded-media top conveyed on the platen with the conveyance roller, and performing horizontal scanning.

[0003]

[Problem(s) to be Solved by the Invention] In the conventional ink jet recording device, although the form width-of-face sensor for detecting the width of face of a form may be formed for the purpose of checking that the form of sizes various as recorded media may be used, and the magnitude of a record image and the magnitude of a form have agreed, in order to make a recording device simple and to hold down a manufacturing cost low, such a form width-of-face sensor is not carried in many cases.

[0004] So, when the image of larger width of face than the width of face of a form has been printed accidentally, ink will adhere on a platen. In such a case, since there is a fear of ink fixing on a platen, a form being caught in the ink which fixed, and poor conveyance arising when long duration neglect is carried out without cleaning, it is necessary to clean the ink which adhered on the platen.

[0005] Moreover, in the conventional ink jet recording device, in order to make an ink droplet breathe out proper from a recording head and to perform printing to a form to accuracy more, generally auxiliary discharge appearance actuation which breathes out ink from a recording head, introduces new ink near the delivery of ink, and makes the

condition of the ink of this part proper just before starting printing is performed. In order to make it the ink breathed out by auxiliary discharge appearance adhere to neither recorded media nor a platen, since a recording head is moved to a main scanning direction to the location outside the width of face of the greatest form which can convey equipment, i.e., the location of the outside of the maximum printing range, this auxiliary discharge appearance is performed.

[0006] In this auxiliary discharge appearance actuation, even if it is the case where it records on the form of small width of face, it will be necessary to move a recording head to the location of the outside of the maximum printing range, and the time amount which records on that part and one sheet of form will become long.

[0007] Then, even if the purpose of this invention makes ink adhere on a platen accidentally, it is to offer the ink jet recording head which can remove adhering ink easily. Moreover, other purposes of this invention are to offer the ink jet recording head which can perform auxiliary discharge appearance efficiently.

[0008]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the ink jet recording device by this invention In the ink jet recording device which has the head which records by breathing out ink and making it adhere to recorded media, and the platen which supports recorded media in the location which counters a head in the location to record A platen is characterized by having the platen rib which is a height for guiding recorded media, and the hole which was able to be made so that the side of a platen rib might be met on the side face of a platen rib.

[0009] If according to this configuration the ink of the above volume collects to some extent on a platen when the image of larger width of face than the width of face of a form has been printed accidentally, and ink has adhered to the platen The ink which adhered on the platen rib is led to a part for root Motobe of a platen rib with gravity. The ink adhering to the part in which the platen rib is not prepared tends to gather with surface tension, can be drawn near to the ink which adhered near the root of the platen rib which adhesion area cannot move easily greatly at this time, and is led to this part. Thus, ink is transmitted and led to the hole which was able to be made so that the side face of an assembly and a platen rib might be met at a part for root Motobe of a platen rib in the side face of a platen rib, and is smoothly discharged from this hole.

[0010] Furthermore, have a head migration means to move a head to the location which counters the record location of a request of the recorded media on a platen, and it corresponds to the recorded media of two or more sizes mainly used with the ink jet recording device, respectively. If a hole is established in the location near the outside of the edge of the recorded media of each size about the migration direction of a head at a platen, respectively A head can be moved to the location which counters the hole corresponding to the magnitude of the recorded media to record, auxiliary discharge appearance can be performed, regurgitation ink can be made to be able to discharge

from this hole, and migration length of the head at the time of auxiliary discharge appearance can be shortened just before the ink regurgitation for record compared with the former.

[0011]

[Embodiment of the Invention] (Example 1) The schematic diagram of the ink jet recording device by the example 1 of this invention is shown in drawing 1. As shown in this drawing, the recording head 10 which records by breathing out ink The nozzle train with which two or more nozzles which carry out the regurgitation were located in a line at intervals of the convention ink to yellow (Y), MAZENDA (M), cyanogen (C), and black (B) ink regurgitation 4 successive-installation \*\*\*\*\* nozzle section 11, It has the ink tank section 12 which stores the ink of each color, and is carried in the carriage which is not illustrated, and horizontal scanning is carried out to the longitudinal direction (the direction of drawing 1 arrow-head B, and its hard flow) of recorded media 70 by the head migration means which is not illustrated with carriage.

[0012] Recorded media 70 are pinched by the conveyance roller 20 and the pinch roller 30 by which obtains friction with the pinch roller spring 31, and the pressure welding is carried out to the conveyance roller 20 and which were prepared in the main scanning direction (the direction of drawing 1 arrow-head B), and are conveyed in the direction (the direction of drawing 1 arrow-head A) which intersects a main scanning direction by the rotation drive of the conveyance roller 20, and vertical scanning which determines the record location of the conveyance direction is performed. The delivery roller 40 for delivering paper to the recorded media 70 after record is formed in the downstream of the conveyance direction, and two or more arrangement of the spur 50 which carries out the pressure welding of the recorded media 70 to this delivery roller 40 in the location which counters this is carried out in the main scanning direction. The spur 50 is the configuration where the tip sharpened so that the non-established ink of recorded media 70 may not adhere. Between the conveyance roller 20 and the delivery roller 40, the platen 60 for keeping good [ precision ] the physical relationship of recorded media 70 and a head 10 is formed in the location where a head 10 records.

[0013] Next, actuation of this recording device is explained.

[0014] First, specified quantity conveyance is carried out and the conveyance roller 20 performs a certain vertical scanning which determines the record location of this direction for recorded media 70. Next, it records by breathing out ink and making it adhere to recorded media 70, performing horizontal scanning which a head 10 moves to a main scanning direction, and determines the record location of this direction. In this example, when a head 10 moves to the direction of drawing 1 arrow-head B, and an opposite direction, returns to an initial valve position and has a vertical-scanning actuation instruction, without carrying out the regurgitation of the ink after recording by making ink breathe out and completing record of a predetermined recording width, a head 10 performing horizontal scanning in the direction of drawing 1 arrow-head B, the

conveyance roller 20 performs vertical scanning to return actuation and coincidence of a head 10. The predetermined number of these actuation is repeated and the image of one sheet is recorded.

[0015] Next, the configuration of the platen 60 which is the description of this invention is explained with reference to the perspective view of the platen 60 shown in [drawing 2](#).

[0016] As shown in this drawing, the platen rib 61 for holding recorded media 70 in a proper record location is formed in the contact surface (top face of drawing) with the recorded media 70 of a platen 60, and recorded media 70 are conveyed where the platen rib 61 is contacted, and are led to a record location. The hole 62 has opened in the both sides for root Motobe 63 of the platen rib 61 so that the side face of the platen rib 61 may be met.

[0017] In the ink jet recording device which has the platen 60 of such a configuration If the ink of the above volume collects to some extent on a platen 60 when the image of larger width of face than the width of face of a form has been printed accidentally, and ink has adhered to the platen 60 The ink which adhered on the platen rib 61 is led to a part for downward root Motobe 63 with gravity. The ink which adhered among two or more platen ribs 61 tends to gather with surface tension, can be drawn near to the ink of the root Motobe part 63 neighborhoods where adhesion area cannot move easily greatly in this case, and is led to a part for root Motobe 63. Thus, ink gets across the side face of an assembly and the platen rib 61 to a part for root Motobe 63 of the platen rib 61, and is smoothly discharged from a hole 62.

[0018] In the ink jet recording device of this example, since adhering ink can be discharged from a hole 62 in this way even if it makes ink adhere to a platen 60, even if a user does not clean a platen 60, it can prevent that ink fixes on a platen 60.

[0019] (Example 2) Next, with reference to the top view of platen 60 part of the ink jet recording apparatus shown in [drawing 3](#), the ink jet record approach of an example 2 is explained. In this example, the configuration and platen configuration of a recording device are the same as that of an example 1, and omit explanation. Below, the approach of the auxiliary discharge appearance which is the description of the ink jet record approach by this example is explained.

[0020] Although auxiliary discharge appearance was performed since the head 10 was moved to the main scanning direction until it came to the location outside the side edge of the form of the greatest width of face which can be conventionally used as recorded media 70 In this example, in printing in the form of width of face narrower than the maximum form width of face, a head 10 is moved to the location which counters the platen 60 outside the side edge of the form, and it performs auxiliary discharge appearance.

[0021] namely, as shown in [drawing 3](#), in printing in the form 71 of A4 size Move a head 10 to the location which counters the location of hole 62a of the side ([drawing 3](#) right-hand side) near the edge of the location 71 outside the side edge of this form 71,

i.e., the form of platen rib 61a, and auxiliary discharge appearance is performed. In discharging regurgitation ink from this hole 62a and printing in the form 72 of B5 size A head 10 is moved to the location which counters the location of hole 62b of the side ( drawing 3 right-hand side) near the edge of the location 71 outside the side edge of this form 72, i.e., the form of platen rib 61b, auxiliary discharge appearance is performed, and regurgitation ink is discharged from this hole 62b. Under the present circumstances, what is necessary is to input into an ink jet recording device the information on the size of a form that it prints, based on the information from a personal computer etc., and just to make it determine an auxiliary discharge appearance location corresponding to this information.

[0022] By thus, the thing for which a hole 62 is formed and it is made to perform auxiliary discharge appearance in the location of this hole 62 corresponding to the size of the form to be used so that it may come to the location near the outside of the form edge of the main scanning direction on a platen 60 when the form of each size is conveyed Distance which moves a head 10 in the case of auxiliary discharge appearance can be shortened compared with the conventional example, and the time amount which records on one sheet of form can be shortened.

[0023]

[Effect of the Invention] According to this invention, even if it makes ink adhere accidentally on a platen by preparing a hole so that the side of a platen rib may be met on the side face of a platen rib, adhering ink can be automatically led to a hole smoothly, and can be discharged. It becomes unnecessary thereby, to be able to prevent that ink fixes and for a user to clean a platen on a platen.

[0024] Moreover, when the form of the magnitude of various kinds is conveyed according to the magnitude of the form to be used, by establishing a hole in a main scanning direction at the part which becomes a location near the outside of a form edge, and making the regurgitation ink by auxiliary discharge appearance discharge from this hole, migration length of the head at the time of auxiliary discharge appearance can be shortened, and printing time amount can be shortened.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the outline block diagram of the ink jet recording device by the example of this invention.

[Drawing 2] It is the detail drawing of the platen of the ink jet recording device of drawing 1.

[Drawing 3] It is the top view of the platen part of the ink jet recording device of

drawing 1 .

[Description of Notations]

10 Head

11 Nozzle Section

12 Ink Tank Section

20 Conveyance Roller

30 Pinch Roller

31 Pinch Roller Spring

40 Delivery Roller

50 Spur

60 Platen

61, 61a, 61b Platen rib

62, 62a, 62b Hole

63 A Part for Root Motobe

70 Recorded Media

71 Form (A4)

72 Form (B5)